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Dear Mr. Herrick:

Thank you for your June 3, 1999, questions and comments on the South Delta Improvements component of the CALFED Bay-Delta Program. As you know, CALFED is a cooperative effort of state and federal agencies with an interest, ownership or regulatory responsibility in the Delta. The CALFED agencies have been meeting at staff technical and policy levels to complete the long-term plan for resolving problems in the Bay-Delta.

One of the fora in which the CALFED agency decision-makers meet is the Policy Group. The CALFED staff have provided detailed briefings on the status of the varying south Delta improvement proposals to this group for some time now. In addition, the Policy Group meets more informally in "small group" meetings. These meetings provide an opportunity to discuss issues in greater detail. The CALFED staff has spent a considerable amount of time briefing the CALFED agencies at their small group meetings.

The CALFED agencies agreed by consensus on the components of the preferred alternative analyzed in the Draft Programmatic EIS/EIR released on June 25. The CALFED agencies will consider public comment on the draft in crafting a final preferred programmatic alternative. A final Programmatic EIS/EIR is scheduled to be released next summer.

After the final programmatic document is completed, many actions will need additional site-specific environmental review prior to implementation. The CALFED agencies welcome your comments on all elements of the draft document. Specific responses to your technical questions follow:

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**CALFED Agencies**

**California**

The Resources Agency  
Department of Fish and Game  
Department of Water Resources  
California Environmental Protection Agency  
State Water Resources Control Board  
Department of Food and Agriculture

**Federal**

Environmental Protection Agency  
Department of the Interior  
Fish and Wildlife Service  
Bureau of Reclamation  
U.S. Geological Survey  
Bureau of Land Management  
U.S. Army Corps of Engineers

Department of Agriculture  
Natural Resources Conservation Service  
U.S. Forest Service  
Department of Commerce  
National Marine Fisheries Service  
Western Area Power Administration

John Herrick, Esq.  
July 14, 1999  
Page 2

**Question 4.** Enclosed is a copy of the ISDP Biological Assessment dated April 11, 1997. Appendix A, Studies 2A and 4A are comparisons of studies with and without the Grant Line Canal Flow structure and increased Banks Pumping Plant exports. Study 2B and 4B is the same study without increased exports. Attachment 1 summarized the modeling output for the below normal, dry, and wet years for Studies 2A and 4A.

**Question 5.** No recent DWRDSM analyses have been done with the GLC barrier at the western end. The most comprehensive analyses that were done using a western GLC barrier are included in the 1996 Draft EIR/EIS for ISDP. Due to Corps' concerns regarding impacts to recreation and navigation, the GLC barrier was relocated to the eastern (TBP) location. Corps staff considered the navigation and recreation impacts as "public trust" impacts that would likely prohibit the Corps from issuing a 404 permit for ISDP. In response to the Corps' concerns, DWR began to model a Grant Line Canal eastern location. The first modeling analyses were done for the ISDP Biological Assessment, Appendix A, B, and C, April 11, 1997(enclosed) and subsequently used for all SDIT studies. The modeling showed benefits to SDWA upstream of the barrier and stage reductions downstream of the barrier. The downstream diverters' water supply access needs would be addressed through dredging and extending diversion along Grant Line Canal.

**Question 6.** The comparisons of GLCB-Base vs. No GLC-Base minimum stages were based on the modeling output for studies 2A (with Grant Line Canal Barrier) and 4A (without the Grant Line Canal Barrier) in the ISDP Biological Assessment dated April 11, 1997. The operational assumptions are found in Section II of the Biological Opinion.

**Question 7.** Minimum stage levels are the lowest elevation in a 25-hour cycle for each month.

**Question 8.** When the barrier operation cuts off the flow down Grant Line Canal and the projects have a given level of pumping; correspondingly more water is drawn from other channels. This causes a net reduction in the flow's cross-sectional area, with corresponding higher velocity and friction loss. This requires a steeper hydraulic gradient to overcome the higher friction losses. A steeper hydraulic gradient in the direction of flow results in a lower water surface elevations at the pumps. Since there is little flow in Grant Line Canal, there is no hydraulic gradient there either. As a result, lower elevations are translated with little change from the location of the export pumps up GLC to the base of the barrier.

For example, for summer exports of 5,100-cfs SWP and 4,300-cfs CVP, lower Grant Line Canal stages drop approximately 0.5-ft at the west end and 0.4-ft at the east end. A Grant Line Canal east barrier lowers stages 0.9-ft immediately downstream of the barrier and 0.6-ft at the west end of Grant Line Canal. (Attachment 2).

John Herrick, Esq.  
July 14, 1999  
Page 3

**Question 9.** The correction factor of -0.6 feet applied to modeled output being used to predict actual water surface elevations when Joint Points of Diversion operations are being planned, is only accurate for a single location in the south Delta -- the Old River at Tracy Road Bridge station. This correction factor was determined from historical water levels compared with modeled levels, but only for times of the year when barriers were not in place (typically in the wetter times of the year when JPOD would likely be used). If water levels at this location are at or above 0.0 feet MSL after the correction factor is applied, then water levels are deemed adequate for agricultural diversions in south Delta channels, in accordance with the JPOD Response Plan. However, this correction does not apply well when barriers are operating, and does not apply to other locations in the south Delta. Recent modeling done to determine impacts to water levels when MR and ORT barriers were operating and the Grant Line Canal barrier was "tied open", showed that the model very closely predicted water levels at the Old River at Tracy Road Bridge location without any correction factor at all. More studies would have to be done to verify the accuracy of the model under different hydrologies, pumping rates, and tides, whenever barriers were in various degrees of operations.

If CALFED determines that the stages are inadequate at specific locations to assure reliable SDWA water deliveries, then agricultural diversions in the vicinity will be extended deeper into the river. The channel segment will also be dredged to provide adequate clearance to install fish screens at the extended diversion and to also assure sandbars and other sedimentation problems are not obstructing flow to the diversion. Dredging will be done judiciously to minimize the impact of dredging operations on stages upstream of where the dredging is taking place.

**Question 10.** Modeling of the effects of limited channel dredging on south Delta hydrodynamics has not yet been completed. To better respond to SDWA's concerns, and to limit dredging to essential sections only, DWR is working to provide more detailed, up-to-date cross-sectional representation of south Delta channels for its proposed evaluation of dredging impacts.

The USGS is reviewing and updating all of the cross-sections in the DSM2 Model. The south Delta (Area 4) is essentially complete with only a few sections needing some additional review. Overall, the update process for the entire Delta should be completed this summer. The model will subsequently be recalibrated with the new geometric data in place, then used to model the effects of dredging specific limited channel segments.

**Question 11.** Data sheets from the 1997 ISDP Biological Opinion Runs 2A and 4A (enclosed) are attached for your review. Note that null zones exist when the flow directions from Sections 10 and 12, or Sections 13 and 14 are opposite (one is positive and the other is negative). These studies do not assume any dredging beyond the 5-mile reach of Old River

adjacent to Victoria Island which is generally included in every alternative except the No Action alternative.

**Question 12.** Areas that DWR staff is currently studying for dredging include channel reaches along Grant Line Canal, sections downstream of the flow structures (Middleton Island, Hammer Island, Coney Island) and reaches east of Tracy Boulevard on Old River up to the Head of Old River, and the Four Corners area. It is possible that other areas will also need dredging, or that some sections in these reaches will not need to be dredged.

Several pieces of information will be used to determine if dredging is required. The following has already been done by DWR:

- Tide information, and mean-low-low-water level information along the south Delta channels.
- Invert elevations of existing pumps in the south Delta.
- Clearance requirements under pump inverts to install various types and designs of fish screens. This has been done using typical conical and cylindrical dimensions.

The following tasks are either in progress or will be done in the future:

- DWRDSM modeling data showing the minimum water surface elevations, flows, and velocities in south Delta channels. Currently, DWR is updating the DWRDSM cross-sections to include 1998 channel bathymetry, and will increase the number of cross sections in the program. This work is in progress.
- Measure invert data at south Delta siphons (this will be done this summer).
- Develop an understanding of how the new Clifton Court Forebay screened intake will operate. Until this is agreed upon, a "worst case" scenario will be modeled that will pump like the Tracy Pumping Plant. DWR will apply a scenario with the greatest stage impacts in order to capture the full range of potential impacts for the revised Draft EIR/EIS. Interagency design teams are currently being assembled to design the intake facility. October 1999 is CALFED's goal for agreement upon a better defined operation.
- Run DWRDSM with existing cross-sections and calibration to study incremental changes caused by dredging. Runs will include: No Action Alternative, No Flow Structure (Head of Old River fish structure) alternative, Two Flow Structure alternative, and a Three Flow Structure alternative. (September 1999).
- Re-calibrate DWRDSM model with new cross-sections, and rerun DWRDSM modeling runs. (October 1999).

**Question 13.** This data is included in the 1996 DEIR/EIS. For comparison, DWR modeled October with HOR, Middle River and Old River at Tracy barriers in operation, and modeled November without the Middle River and Old River at Tracy barriers.

**Question 14.** In a sub-critical open channel flow regime (as found in south Delta channels) dredging can affect upstream stages. To date, DWR does not have specifics as to where this might occur. See Question 12 for timeframe on modeling analyses.

**Question 15.** Based on modeling for ISDP and real time operation of the Temporary Barriers program, the best circulation occurs when only the Middle River and Old River at Tracy flow structures are in operation. Under modeled operational scenarios with long gate closures and typical San Joaquin River summer flows, operation of the Grant Line Canal barrier can create null zones (when "no-project" conditions did not have null zones). The modeling results were confirmed in 1996 during the first year of Grant Line Canal temporary barrier operations. When the barrier was installed, null zones soon developed on Old River just downstream from the Tracy Boulevard Bridge. Dissolved oxygen levels in this reach of Old River also dropped below 5ppm. To correct the problem four flap gates were tied open at the barrier. In response to this concern, DWR began modeling GLC with limited gate closure times (5-hours per tidal cycle).

**Question 16.** CALFED agencies and the CALFED Bay-Delta Program have studied various configurations of the design, operation, water supply benefits, and environmental impacts of the barriers, some for over a decade. Specific information regarding the operation of two gates has been studied in detail beginning in 1997. However, evaluation of specific dredging in south Delta channels and the operation of a screened Clifton Court Forebay has not been as detailed. For this reason, the Grant Line Canal flow structure remains "on the table" for future implementation if the SDIP's two flow structure alternative and other actions prove to be inadequate in meeting CALFED's water reliability goals for the south Delta region.

**Question 17.** The Middle River and Old River at Tracy barriers are likely to provide adequate protections for the majority of upstream diverters on Middle and Old Rivers. For diverters on Grant Line Canal, the Four Corners area, and for the upstream reaches of Middle River and Old River, a combination of dredging and extending diversions would allow adequate protection even if stages in the area of some diversions are reduced due to dredging.

CALFED's goals for the Bay-Delta system, including ecosystem restoration, water supply reliability, water quality, and levee system reliability, are well documented in the current draft Programmatic EIR/EIS.

**Question 18.** See Question 17.

**Question 19.** The Interim South Delta Program was an independent planning effort conducted by DWR and USBR. It is likely that these agencies will continue as lead state and federal agencies under CEQA and NEPA. However, the planning and implementation of actions in the south Delta region is now being conducted within the framework of the CALFED Bay-Delta Program, with the active participation of resource and permit agencies, in order to achieve a balanced and comprehensive solution to identified concerns. Accordingly, the Corps has verbally notified SDIT that it is changing the project purposes to reflect a broader, more general set of project purposes.

The Temporary Barriers Program has been implemented under independent environmental documentation. However, the permanent barriers are expected to be considered along with the new screened intake for Clifton Court Forebay, channel dredging, and extension of local agricultural intakes in the revised project evaluation. The revised draft EIR/EIS will contain a full impact evaluation of the alternatives currently under consideration.

**Question 20.** The cross-section plots presented at the public meeting on Friday, May 28, were used to evaluate problems associated with depth, such as, pump intake elevations, fish screen installation parameters, and probable depths of dredging. The scales were automatically selected by the Microsoft Excel spreadsheet software to maximize the display of the information within the available plotting area (approximately 5" x 7") on a standard (11" x 8-1/2") sheet of paper. Cross-section plots are normally displayed using different vertical and horizontal scales because of the large disparity between vertical and horizontal distances that exist in most "real-life" cross-sections. For the cross-sections presented at the public meeting, the disparity between the vertical data and horizontal data varied from a minimum of 10 (the actual horizontal length of the cross-section was 10 times greater the actual vertical height of the cross-section) to a maximum of 37 (the horizontal length was 37 times greater than the vertical height). In order to provide a realistic representation of the cross-sections where 1 vertical unit is equal to 1 horizontal unit, excessively long sheets of paper would be required for plotting. That is, if the plotted cross-sections were assumed to have a maximum plotted height of only 3 inches, the plotted lengths would vary from a minimum of 30 inches (2-1/2 feet) to 111 inches (9-1/4 feet). For the purposes stated above, the realistically represented cross-sections would be no more useful than the original plots.

**Question 21.** CALFED seeks to develop a program that meets its ecosystem restoration, water quality, water supply reliability goals, and levee system integrity goals, while meeting all permit requirements. However, permit agencies have indicated that the earlier preferred alternative, as described in the 1996 draft ISDP EIR/EIS, would not be permissible without significant modifications and concurrent CALFED actions to address ecosystem restoration and other concerns. The current proposed alternative configurations have been advanced to

John Herrick, Esq.  
July 14, 1999  
Page 7

address these concerns while meeting the broader CALFED objectives as well. CALFED seeks to understand, and address to the extent feasible, all stakeholder concerns, but recognizes that there will need to be a reasonable degree of compromise and accommodation to achieve a balanced, implementable solution.

**Question 22.** Yes. The agreement recognizes the fact that the project must get permits, go through a full CEQA/NEPA analysis, and get a Biological Opinion. All parties recognized that several regulatory hurdles stand in the way of full implementation. The draft Contract, 7. Environmental Compliance and Permits, states, "All parties' obligations are subject to compliance with the CEQA and NEPA, and no final decisions shall be made unless they are in accordance with CEQA and NEPA. All parties shall comply with all applicable laws and regulations of the United States and the State of California, and shall obtain all legally required permits or licenses from appropriate Federal, State or local authorities."

Section 10. Settlement of lawsuit and Remedies, c. Remedies, 1) a) states, "If the barrier facilities cannot be constructed as intended, or are only partially constructed for reasons beyond the control of the parties, USBR and DWR agree to modify the barrier facilities to meet the original objectives so long as the modifications do not require any additional legislative authorization, appropriation, nor will they exceed the dollar limit listed in Article 6.e. of this contract."

As you requested, the remaining questions have been referred to DWR counsel for response.

Sincerely,

Stein M. Buer  
Assistant Director

Enclosures

cc: Alf Brandt, USBR  
Al Candlish, USBR  
Kathy Kelly, DWR  
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